Lake Erie Fisheries Report 1985

Prepared for the
Lake Erie Committee Meeting
Great Lakes Fishery Commission
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Prepared by the
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A. RESUME OF 1985 CATCH STATISTICS

a. Commercial

In 1985, the total commercial catch reported from the Canadian waters of Lake Erie increased from that of 1984 by 5.5 million pounds to 41.8 million pounds (Table 1). The landed value of the catch decreased from 26.3 million dollars in 1984 to 19.4 million dollars in 1985 (Table 2).

The catch of rainbow smelt increased from 16.3 million pounds in 1984 to 23.6 million pounds in 1985. The increase in catch reflected an increase in abundance of smelt in the major smelt fishing areas of the eastern and central basins. The catch in OE-2 was the major contribution to the increase in catch in 1985 with 5.2 million pounds being taken there compared to less than 3,000 pounds from the same area in 1984 (Table 3). The landed value of rainbow smelt increased from 1.6 million dollars in 1984 to 2.9 million dollars in 1985.

Total landings of yellow perch remained relatively stable from 1984 to 1985 with 8.9 million pounds being harvested in 1985 (Table 2). The total value of yellow perch decreased from 16.9 million dollars in 1984 to 9.1 million dollars in 1985. This reduction of 7.8 million dollars was the major factor influencing the overall decline in the value of the fishery in 1985.

The catch of white bass in 1985 was 4.7 million pounds and was up only marginally from the 4.4 million pounds harvested in 1984 (Table 2). Consistent with the stability of harvest of white bass from 1984 to 1985, the value of the 1985 catch remained relatively constant with the 1985 landed value being 2.0 million dollars.

The landed catch of yellow pickerel (walleye) as summarized from commercial fishermen's reports of landings increased marginally from 4.2 million pounds in 1984 to 4.7 million pounds in 1985 (Table 2). The value decreased from 5.8 million dollars in 1984 to 5.4 million dollars in 1985.

The landed catch and value of other species normally presented in Table 3 were unavailable at the time of printing. A summary of catch and value for other species will be completed in 1986 and included in the report to the Lake Erie Committee in March of 1987.

Data on age composition and mean length and weight at age for selected species sampled from the commercial catch are presented in Tables 4 to 9 inclusive.

b. Sport

In 1985, direct contact creel surveys were conducted on the summer boat fisheries in the following areas:

The vicinity of Chicken, Hen and East Sister Islands (Sector I)

The vicinity of Pelee Island (Sector II)

Point Pelee to Colchester (Sector III)

Long Point Bay (Sector VI)

Note that Sectors I, II and III were surveyed from June throughout September.

In addition, the following fisheries were surveyed: 1) the winter ice fishery in Inner Long Point Bay, 2) the Wheatley, Leamington, and Kingsville docks during July and August, and 3) a lakewide diary programme involving 66 volunteers who fished from boats.

In 1985, estimated angling pressure in Long Point Bay increased marginally, (7% over that of 1984). Note that the Sector VI angling pressure figures reported in Table 11 of the Lake Erie Fisheries Report, 1984 are inaccurate and should read an estimated 208,857 rod-hours and an estimated 224,488 angler-hours. The overall harvest in number also increased with the majority of the increase occurring in smallmouth bass which increased from 43,006 fish in 1984 to 58,398 fish in 1985.

In the western basin (Sectors I and II) walleye fishery (Table 12), estimated fishing effort and success rates remained essentially unchanged over 1984 figures.

During July and August, an estimated 14,800 rod-hours of angling pressure were exerted in the dock fisheries at Wheatley (3,497 (24%)), Leamington (8,165 (55%)) and Kingsville (3,138 (21%)). The majority of the harvest at all three locations included an estimated 4,538 yellow perch, 572 freshwater drum, 322 white perch, 307 white bass and 139 walleye.

The volunteer diary program which was initiated in 1984 with charter boat operators, was expanded in 1985 to include members of fishing clubs and the general angling public. Sixty-six diarists representing over 850 trips responded and the data are currently being analysed.

Table 1. Canadian Waters of Lake Erie
Commercial Landings
1960-1985

Year	Total Pounds	Total Value
1960	28,181,000	$ 2,033,000
1961	36,350,000	2,516,000
1962	43,296,419	2,296,635
1963	34,069,000	2,523,635
1964	25,391,428	2,377,284
1965	35,096,120	3,319,307
1966	41,435,283	3,104,813
1967	37,775,009	3,339,460
1968	39,415,250	2,973,814
1969	48,025,996	4,244,149
1970	31,755,446	3,770,281
1971	29,075,559	4,254,692
1972	29,978,000	5,324,000
1973	39,829,000	7,038,000
1974	38,686,000	5,634,000
1975	30,548,620	6,009,093
1976	25,729,080	6,000,970
1977	35,853,556	7,736,701
1978	40,159,610	9,883,626
1979	40,839,668	17,555,598
1980	42,849,000	14,207,000
1981	44,711,277	20,279,830
1982	59,500,000	26,183,000
1983	45,682,046	17,613,206
1984	36,305,219	26,349,853
1985[+]	41,800,000	19,400,000

[+] Preliminary data.

Table 2. Commercial fish production and value from the Canadian waters of Lake Erie, 1984 and 1985[a] shown in millions of pounds and millions of dollars. Totals may differ from sum of species values due to rounding error.

Species	1984		1985		Change in Catch	Change in Value
	Pounds	Value	Pounds	Value		
Smelt	16.3	1.6	23.6	2.9	+7.3	+1.3
White bass	4.4	1.8	4.7	2.0	+0.3	+0.2
Yellow perch	9.3	16.9	8.9	9.1	-0.4	-7.8
Y. pickerel (walleye)	4.2	5.8	4.7	5.4	+0.5	-0.4
Other	2.1	0.2	NA	NA		
Total	36.3	26.3	41.8	19.4	+5.5	-6.9

[a] Preliminary figures - not for publication.

Table 3. Lake Erie commercial fish landings of major species by statistical district from Canadian waters of Lake Erie, 1985. Totals may differ from sum of species values due to rounding error.

Species	OE-1	OE-2	OE-3,4,5	Total Landings (lbs)	Total Value ($)
Rainbow smelt	0	5,203,500	18,365,000	23,568,600	2,862,200
White bass	2,067,700	1,543,800	1,048,700	4,660,200	1,975,100
Yellow perch	3,003,400	4,608,400	1,242,800	8,854,600	9,111,900
Y. pickerel (walleye)	3,300,900	810,600	573,700	4,685,200	5,426,100
Total Landings (lbs)	8,372,000	12,166,300	21,230,300	41,768,600	
Total Landed Value ($)	7,789,900	6,967,300	4,618,100		19,375,300

Table 4. Year-class composition, average total length (cm) and weight (g) of yellow perch (sexes combined) from Lake Erie commercial catch samples by season and statistical district, 1985. n is sample size.

Season[a] and Statistical District	Year Class / Age	1984 / 1	1983 / 2	1982 / 3	1981 / 4	1980 / 5	1979 / 6	1978 / 7	1977 / 8	n
Spring OE-1	% Comp.			31.2	52.7	15.3	0.7	0.1		811
	Length			20.1	20.5	21.1	21.6	26.6		811
	Weight			98.1	102.3	111.9	114.8	260.0		811
Summer OE-1	% Comp.	0.1	1.4	65.3	31.5	1.5	0.2			991
	Length	9.4	19.2	20.0	20.3	20.6	22.8			991
	Weight	10.0	96.6	105.7	110.4	127.8	176.5			991
Fall OE-1	% Comp.		2.2	69.5	26.4	1.7	0.2			591
	Length		20.2	20.4	20.7	21.6	26.1			591
	Weight		102.1	108.5	113.7	138.8	260.0			591
Spring OE-2	% Comp.		0.3	61.7	29.7	7.8	0.5			1196
	Length		18.4	20.3	21.1	21.9	23.2			1190
	Weight		76.8	107.6	116.7	130.8	158.0			1196
Summer OE-2	% Comp.		1.9	81.1	15.3	1.7	0.1			1072
	Length		19.4	20.2	20.7	22.9	21.6			1071
	Weight		101.2	115.6	121.7	169.2	142.0			1072
Fall OE-2	% Comp.	0.4	3.7	78.9	15.8	1.2				683
	Length	17.0	20.2	21.2	20.9	23.6				682
	Weight	65.3	111.1	127.3	121.8	213.5				683
Spring OE-3	% Comp.		0.5	54.8	40.8	3.8				598
	Length		18.5	20.1	21.2	21.9				598
	Weight		88.3	108.1	122.3	135.2				598
Summer OE-3	% Comp.	0.3	5.3	80.8	12.7	0.8				636
	Length	17.6	20.1	21.1	22.5	28.1				636
	Weight	69.0	114.4	136.9	171.6	346.6				636
Fall OE-3	% Comp.	1.8	4.3	72.6	19.3	2.0				398
	Length	17.4	20.8	22.3	23.5	25.5				398
	Weight	70.0	125.2	162.9	195.6	267.3				398
Spring OE-4	% Comp.		1.2	42.9	47.3	7.9	0.6	0.1		907
	Length		18.6	20.1	21.0	21.1	22.5	27.5		906
	Weight		81.0	98.4	111.0	112.1	118.0	245.0		907
Summer OE-4	% Comp.		5.0	55.7	34.4	4.1	0.5	0.1	0.1	1476
	Length		18.9	19.6	20.1	20.6	22.2	22.8	30.2	1475
	Weight		87.8	97.5	104.5	112.9	147.5	177.0	406.0	1476
Fall OE-4	% Comp.	0.5	29.0	54.3	15.2	1.0				573
	Length	19.0	20.2	20.8	21.3	22.9				573
	Weight	95.7	104.7	113.1	123.0	158.7				573
Spring OE-5	% Comp.		1.1	53.0	41.9	3.9				279
	Length		19.8	21.5	22.3	22.6				273
	Weight		101.3	119.0	141.4	154.6				279
Summer OE-5	% Comp.		6.9	65.1	23.4	4.4	0.2			479
	Length		19.7	20.5	21.6	23.4	27.5			475
	Weight		101.7	117.4	137.0	183.4	273.0			479

[a] Spring = April-June, Summer = July-September, Fall = October-December.

Table 5. Year class composition, average total length (cm) and weight (g) of rainbow smelt (sexes combined) from Lake Erie commercial catch samples by season and statistical district, 1985. n is sample size.

Season[a] and Statistical District	Year Class / Age	1984 / 1	1983 / 2	1982 / 3	1981 / 4	n
Spring OE-2	% Comp.		97.9	2.1		47
	Length		11.4	12.2		47
	Weight		6.0	10.0		47
Summer OE-2	% Comp.	97.0	2.8	0.3		361
	Length	12.2	12.7	18.0		361
	Weight	8.2	9.0	26.0		361
Spring OE-3	% Comp.	50.0	16.7	33.3		12
	Length	11.0	13.8	16.1		12
	Weight	7.5	13.5	21.5		12
Summer OE-3	% Comp.	96.8	1.9	1.3		154
	Length	12.2	12.8	18.4		154
	Weight	9.0	10.7	32.0		154
Winter OE-4	% Comp.	2.0	35.3	58.8	3.9	102
	Length	12.0	13.9	16.3	17.8	102
	Weight	10.0	16.4	27.6	35.5	102
Spring OE-4	% Comp.	8.3	38.6	49.7	3.4	145
	Length	9.8	14.2	16.2	18.9	145
	Weight	4.9	15.5	25.0	41.2	145
Summer OE-4	% Comp.	91.8	5.5	2.4	0.3	329
	Length	11.7	15.0	17.8	22.0	328
	Weight	7.8	17.9	33.8	76.0	329
Fall OE-4	% Comp.	95.3	4.7			341
	Length	12.0	13.1			340
	Weight	7.9	9.5			341
Summer OE-5	% Comp.	93.5		6.5		46
	Length	11.7		15.7		46
	Weight	7.6		22.0		46
Fall OE-5	% Comp.	93.3	6.7			30
	Length	12.1	12.6			30
	Weight	7.0	8.0			30

[a] Winter = January-March, Spring = April-June, Summer = July-September, Fall = October-December.

Table 6. Year-class composition, average total length (cm) and weight (g) of walleye (sexes combined) from commercial catch samples taken from large mesh gillnets (≥89 mm) in western Lake Erie (OE-1), by season, 1985. n is sample size. Data are presented for the two size categories into which walleye are sorted prior to landing.

Season[a] and Statistical District	Year Class	1984	1983	1982	1981	1980	1979	1978	1977	1976	n
	Age	1	2	3	4	5	6	7	8	9	
					Walleye (Category 1)[b]						
Spring	% Comp.		15.0	77.4	5.9	1.6	0.2				579
OE-1	Length		39.4	42.2	47.3	49.5	53.5				579
	Weight		654.8	654.7	943.3	542.0	-				60
Summer	% Comp.	0.2	13.0	82.5	3.2	1.1					439
OE-1	Length	34.2	38.9	43.8	47.8	50.8					439
	Weight	-	985.0	930.8	1,081.0	1,601.0					20
Fall	% Comp.	1.7	13.5	81.3	3.0	0.2				0.2	466
OE-1	Length	36.4	40.7	46.1	50.9	48.7				70.0	466
	Weight	478.0	967.7	1,098.5	2,104.0	1,326.0				-	39
					Walleye (Category 2)[c]						
Spring	% Comp.		7.4	54.3	13.8	18.2	4.1	1.5	0.7		269
OE-1	Length		39.0	42.9	49.1	54.2	57.3	60.1	65.5		269
	Weight		-	-	-	-	-	-	-		-
Summer	% Comp.			73.3	6.7	6.7	8.3	5.0			60
OE-1	Length			47.4	52.7	55.0	58.7	60.9			60
	Weight			-	-	-	-	-			-
Fall	% Comp.		1.4	46.5	28.2	12.7		4.2	4.2	2.8	71
OE-1	Length		42.0	51.5	54.5	59.7		56.7	67.9	62.2	71
	Weight		-	1,707.8	2,335.2	2,879.0		2,396.5	3,465.3	3,150.0	20

[a] Spring = April-June, Summer = July-September, Fall = October-December

[b] Walleye Category 1 - Walleye less than 534 mm in total length. This category represents 81.7% of the harvest by number.

[c] Walleye Category 2 - Combination of walleye greater than 534 mm in total length and lower quality walleye less than 534 mm in total length.

Table 7. Year-class composition, average total length (cm) and weight (g) of white bass (sexes combined) from Lake Erie commercial catch samples by season and statistical district, 1985. n is sample size.

Season[a] and Statistical District	Year Class / Age	1984 / 1	1983 / 2	1982 / 3	1981 / 4	1980 / 5	1979 / 6	1978 / 7	n
Spring OE-1	% Comp.		0.7	35.6	59.2	4.3	0.1	0.2	917
	Length		28.9	30.4	32.4	34.7	38.2	40.5	917
	Weight		-	357.9	432.1	549.0	-	-	57
Summer OE-1	% Comp.	3.5	2.9	45.7	44.1	3.9			519
	Length	26.2	30.1	31.8	33.4	35.6			519
	Weight	-	-	491.5	531.4	620.5			40
Fall OE-1	% Comp.	10.6	2.7	42.6	41.3	2.5	0.4		566
	Length	27.3	30.9	32.7	34.5	36.7	37.9		566
	Weight	299.7	505.5	608.7	698.7	755.0	-		39
Spring OE-2	% Comp.		0.3	29.5	62.6	7.1	0.6		353
	Length		27.7	31.1	32.9	35.2	36.5		353
	Weight		-	463.7	464.0	-	-		18
Summer OE-2	% Comp.		1.3	48.7	47.4	2.6			78
	Length		30.2	32.5	34.4	36.6			78
	Weight		-	-	-	-			-
Fall OE-2	% Comp.	8.5	1.0	43.7	45.2	1.5			199
	Length	26.3	32.0	32.8	34.7	38.5			199
	Weight	320.0	-	608.3	722.9	-			19
Spring OE-3	% Comp.			23.1	71.3	4.7	0.4	0.6	529
	Length			30.4	32.5	35.2	36.3	38.7	529
	Weight			403.0	499.2	494.5	551.0	779.0	130
Summer OE-3	% Comp.			15.3	76.7	7.3	0.7		150
	Length			31.0	32.9	35.0	38.1		150
	Weight			417.1	517.8	587.8	-		40
Fall OE-3	% Comp.	2.5	1.9	28.9	62.9	3.1	0.6		159
	Length	27.7	31.0	32.5	34.3	37.4	40.8		159
	Weight	-	-	534.1	726.5	845.0	-		30
Spring OE-4	% Comp.		0.4	25.6	69.6	4.4			273
	Length		28.2	30.7	32.9	34.9			273
	Weight		-	412.3	541.3	650.4			79
Summer OE-4	% Comp.			20.0	72.5	6.3	1.3		80
	Length			31.2	32.6	36.4	36.8		80
	Weight			420.6	526.6	593.0	-		20
Spring OE-5	% Comp.		1.4	25.8	71.4	1.4			213
	Length		30.6	30.9	31.9	34.8			213
	Weight		417.3	447.4	498.5	691.7			213
Summer OE-5	% Comp.			30.0	65.0	5.0			20
	Length			31.7	32.8	35.4			20
	Weight			485.7	543.5	676.0			20

[a] Spring = April-June, Summer = July-September, Fall = October-December.

Table 8. Year-class composition, average total length (cm) and weight (g) of lake whitefish (sexes combined) from Lake Erie commercial catch samples by season and statistical district, 1985. n is sample size.

Season[a] and Statistical District	Year Class / Age	1984 / 1	1983 / 2	1982 / 3	1981 / 4	1980 / 5	1979 / 6	1978 / 7	n
Fall[b] OE-1	% Comp.		1.2	45.9	28.2	14.1	9.4	1.2	85
	Length		44.6	44.5	47.9	51.4	56.9	57.3	85
	Weight		-	-	-	-	-	-	-
Winter[c] OE-4	% Comp.	100.0							45
	Length	18.7							45
	Weight	61.7							45
Spring OE-4	% Comp.	100.0							42
	Length	18.6							42
	Weight	52.3							42
Summer OE-4	% Comp.	98.8		1.2					80
	Length	24.9		42.2					80
	Weight	149.1		979.0					80
Fall OE-4	% Comp.	95.0	5.0						20
	Length	27.0	26.2						20
	Weight	189.5	153.0						20

[a] Winter = January-March, Spring = April-June, Summer = July-September, Fall = October-December.

[b] Samples from walleye/white bass large mesh (greater than 76 mm) gillnets.

[c] Samples from smelt trawls.

Table 9. Year-class composition, average total length (cm) and weight (g) of white perch (sexes combined) from Lake Erie commercial catch samples by season and statistical district, 1985. n is sample size.

Season[a] and Statistical District	Year Class / Age	1984 / 1	1983 / 2	1982 / 3	1981 / 4	n
Spring OE-1	% Comp.		32.0	68.0		50
	Length		17.5	20.2		50
	Weight		79.3	130.0		50
Summer OE-1	% Comp.	49.4	25.0	24.4	1.1	176
	Length	15.0	19.5	21.4	24.8	176
	Weight	52.7	120.7	160.5	267.5	176
Fall OE-1	% Comp.	74.2	16.1	9.8		62
	Length	16.3	20.4	22.6		62
	Weight	64.5	135.5	195.0		62
Spring OE-2	% Comp.	5.5	48.2	45.4	0.9	218
	Length	10.3	17.7	20.0	21.1	215
	Weight	22.3	86.6	133.6	157.5	218
Summer OE-2	% Comp.	46.2	29.7	21.4	2.8	145
	Length	13.5	18.9	21.6	22.6	145
	Weight	39.9	102.5	168.9	192.8	145
Fall OE-2	% Comp.	80.9	9.8	7.5	1.7	173
	Length	15.9	20.1	20.9	24.2	173
	Weight	62.5	137.6	160.5	240.0	173
Spring OE-3	% Comp.		34.4	63.9	1.6	61
	Length		17.2	19.3	21.8	61
	Weight		80.0	125.4	200.0	61
Summer OE-3	% Comp.	30.7	38.6	28.4	2.3	88
	Length	14.3	18.2	21.3	22.5	88
	Weight	48.3	92.1	165.0	199.0	88
Fall OE-3	% Comp.	57.0	16.5	25.3	1.3	79
	Length	15.8	20.2	22.7	25.1	79
	Weight	65.7	141.4	209.8	266.0	79
Spring OE-4	% Comp.		35.7	60.4	3.9	154
	Length		17.4	20.1	22.3	153
	Weight		83.9	137.3	193.3	154
Summer OE-4	% Comp.	19.0	48.3	30.2	2.4	205
	Length	11.2	17.5	20.6	23.6	205
	Weight	21.6	76.2	133.1	202.8	205
Fall OE-4	% Comp.	67.6	17.3	13.0	2.2	139
	Length	15.3	19.1	22.4	24.4	139
	Weight	55.7	105.9	184.8	211.7	139
Spring OE-5	% Comp.		48.3	51.7		58
	Length		17.1	19.4		57
	Weight		75.7	123.6		58
Summer OE-5	% Comp.	1.1	36.7	55.6	6.7	90
	Length	12.5	18.4	20.2	22.7	90
	Weight	30.0	93.7	126.2	184.7	90
Fall OE-5	% Comp.	82.0	8.0	10.0		50
	Length	15.5	19.6	20.4		50
	Weight	54.1	122.0	138.0		50

[a] Spring = April-June, Summer = July-September, Fall = October-December.

Table 10. Estimated sport harvest (in number kept) by sector on Lake Erie during summer creel census on Lake Erie, 1985.

Species	Sector[a] and Census Period			
	I June 1- Sept. 30	II June 1- Sept. 30	III June 1- Sept. 30	VI[b] May 1 - Aug. 31
Yellow perch	85	309	2,848	58,072
Y. pickerel (walleye)	36,300	41,511	2,537	341
White bass	56	455	215	
White perch		19	52	
Smallmouth bass	1,091	2,097	679	58,398
Rock bass			70	39,800
Freshwater drum	183			1,150
Largemouth bass				6,675
Northern pike				3,598
Pumpkinseed			198	5,270
Channel catfish	121	403	78	14
Bluegill				2,343
Black crappie				428
Yellow bullhead			16	52
Gizzard shad			24	
Bowfin				12
Total	37,836	44,794	6,717	176,153

[a] Sector Area

I	Vicinity of Hen, Chick and East Sister Islands
II	Vicinity of Pelee Island
III	Point Pelee to Colchester
VI	Long Point Bay

[b] Note: The harvest figures for Sector VI in Table 10 (page 15), Lake Erie Fisheries Report, 1984 are in error and should read: Yellow perch - 59,477; Walleye - 830; White bass - 457; Smallmouth bass - 43,006; Rock bass - 39,269; Freshwater drum - 1,663; Largemouth bass - 4,352; Northern pike - 3,284; Pumpkinseed - 7,112; Channel catfish - 121; Bluegill - 696; Black crappie - 41; White crappie - 550; Total - 160,858.

Table 11. Estimated angling effort by sector during summer creel census on Lake Erie, 1985.

Sector[a] and Census-period	Effort	
	Rod-hours	Angler-hours
I (June 1 - September 30)	53,821	54,050
II (June 1 - September 30)	72,463	73,035
III (June 1 - September 30)	18,174	18,600
VI (May 1 - August 31)	224,025	235,193

[a]

Sector	Area
I	Vicinity of Hen, Chick and East Sister Islands
II	Vicinity of Pelee Island
III	Point Pelee to Colchester
VI	Long Point Bay

Table 12. Comparative sport fishery statistics for walleye in the Western Basin (Sector I and II), Lake Erie, during July and August, 1975-1985.

Year	Estimated fishing effort (rod-hours)	Estimated catch (number)	Estimated harvest (number)	CUE[a]	CUE[b]
1975	45,846	7,707	7,177	0.168	-
1976	97,176	50,949	49,029	0.524	-
1977	129,179	70,561	68,954	0.559	-
1978	146,098	121,441	112,057	0.831	0.758
1979	95,555	88,646	77,765	0.928	0.886
1980	91,237	58,573	56,356	0.642	0.672
1981	136,398	72,467	69,799	0.531	0.515
1982	106,566	50,532	48,058	0.474	0.498
1983	116,649	47,919	40,177	0.411	0.396
1984	81,446	68,314	38,704	0.839	0.636
1985	83,408	59,464	56,777	0.713	0.684

[a] CUE for walleye caught by all anglers derived from estimated effort and estimated catch.

[b] CUE for walleye caught by walleye anglers, derived from observed effort and observed catch.

B. STATUS OF MAJOR SPECIES

Lakewide index trawling confirmed the recruitment of yearling rainbow smelt (1984 year class), particularly in the eastern basin (Table 13). Yearling yellow perch were also strongly evident in the western and central basins. Good hatches of white perch, alewife and gizzard shad were present in western Lake Erie. The index for young-of-the- year yellow perch in the western basin was fair.

Bottom trawling during late summer in the western basin confirmed the strong hatch of white perch and fair hatches for walleye and yellow perch (Table 14). The large index of white perch follows that of the strong 1984 hatch. Good hatches for white perch and white bass were also evident in the west-central basin area.

a. Rainbow smelt

Remnants of the 1982 year class were available during the spring in the eastern basin. The strong 1984 year class was very evident in spring samples in the central basin and during the summer in the eastern basin (Table 15).

With the continued apparent abundance of predators (white bass and walleye) in the central basin, a weak 1983 year class and a marginally stronger 1984 year class, there was some concern that a viable fishery for rainbow smelt would not be likely in 1985. The 1984 year class in the central basin may have been stronger than predicted and the catch per unit of effort in the commercial fishery showed that over 90% of the 1985 catch were yearlings of the 1984 year class.

Index fishing data shows that the 1985 year class is weak in both the central and eastern basins. The strong 1984 year class will continue to remain dominant in the population and the fishery in 1986, with little support available from older age classes and the weak 1985 year class. The carry-over of the 1984 year class will provide moderate fishing success in the spring of 1986 with declining abundance throughout the year.

b. Yellow perch

The catch per unit effort (c/f) (number per 1000 m of experimental gillnet, 1 1/4" to 5" mesh) of yellow perch in all three basins decreased again in 1985. There were slight increases in the spring index catches in the western and central basins but overall c/f declined.

Spring and summer catches in the eastern basin continued to have a broad range of age classes (Table 16). The 1981 and 1982 year classes were prominent in the spring and summer with the 1983 year class becoming more evident in the summer. The strong 1984 year class was also being recruited by late summer.

The strong 1982 year class was especially prominent in central basin spring samples (78%) and persisted in reduced proportion throughout summer (43%) and fall (48%) samples (Table 16). The

moderately strong 1984 year class became evident in summer catches and maintained a strong presence in fall samples. This year class will recruit to the fishery in late 1986 and continue to be available and dominant during the spring and fall of 1987.

Index gillnet samples from the western basin in all seasons contained fish mainly from the relatively strong 1982 year class (Table 16), with minor contribution from other age classes. Again, the moderately strong 1984 year class was present in fall samples and is expected to be recruited and available to the fishery in the late summer and fall of 1986 and continue to be available into 1987.

c. Yellow pickerel (walleye)

The hatching success of walleye in 1984 appeared moderate and perhaps weaker than the strong 1982 year class which dominated the fishery in 1985 and continued to be strongly present in index gillnet catches (Tables 17 & 18). Over 45% of the samples from both bottom and canned experimental gillnets were from the 1982 year class while the 1984 year class was very evident (>40%) and appeared stronger than predicted from the young-of-the-year index survey. The 1981 and 1983 year classes continue to be represented in the resource but the fishable stock in 1986 will be composed primarily of members of the 1982 and 1984 year classes.

d. White bass

Good hatches of white bass were evident again from index trawling in the western and west-central basins (Table 14). The index in the western basin was greater than for the west-central area.

Overall c/f in experimental bottom gillnets increased slightly in all basins, and particularly in the fall in the western basin. The bulk of these samples continued to be from the strong 1981 year class with increasing contributions from the 1982 and 1984 year classes (Table 19).

e. White perch

Overall c/f for white perch in the western basin was similar to that in 1984 (145/1000 m). Although spring catches were low, summer catches were much greater in all basins. Catches from additional fall gillnetting in the western basin had decreased from 1984.

Four age classes were present in the samples with the 1982 year class still a strong contributor (Table 20) while the strong 1984 year class was the main component in the eastern and central basins in the summer and in the central basin in the fall. Samples from additional gillnetting in the western basin also confirmed the presence of four year classes with the 1982 year class being dominant.

Table 13. Relative indices of abundance (catch per trawling hour) of selected fish species at index fishing stations in the basins of Lake Erie, 1985.

Species and Age Group		LAKE ERIE Eastern	Central	Western	Whole Lake Average
Rainbow smelt	YOY	105	23	846	136
	YRLG	9978	844	654	4781
	ADULT	8311	552	24	3861
Yellow perch	YOY	1	4	700	65
	YRLG	42	134	1490	227
	ADULT	4	21	275	39
Walleye	YOY		2	68	7
	YRLG		1	18	2
	ADULT		<1	5	1
White bass	YOY	8	19	283	38
	YRLG	4	1	2	2
	ADULT		<1		<1
White perch	YOY		147	5628	577
	YRLG	23	65	39	44
	ADULT	<1	6	5	3
Freshwater drum	YOY		3	11	2
	YRLG		4	11	3
	ADULT	1	23	24	13
Alewife	YOY		1728	1403	900
	YRLG	130	7	521	111
	ADULT	<1			<1
Gizzard shad	YOY		722	1069	420
	YRLG		3	178	19
	ADULT			1	<1
Spottail shiner	YOY				
	YRLG				
	ADULT	2	< 1	20	3
Emerald shiner	YOY		1	149	14
	YRLG		77	438	79
	ADULT	663	77	496	372
Trout perch	YOY				
	YRLG			155	15
	ADULT	12	13	69	18
Trawl Effort (minutes)		400	430	91	921
		(310)[1]	(300)[1]	(61)[1]	(671)[1]

[1]Reduced effort used in calculating indices of young-of-the-year since the latter are not available to the sampling gear in the spring.

Table 14. Relative indices of abundance (number per trawling hour) of the young of the year of the major fish species in western and west-central Lake Erie. Data for 1977-81 are the corrected outboard trawl catches[1] for the same 7 stations fished weekly from June to October. Data since 1982 are from bottom trawl catches at the same stations fished during late summer.

Year	Walleye	Yellow Perch	White Bass	Freshwater Drum	Rainbow Smelt	White Perch	Effort[2] (minutes)
Western Basin							
1977	32	1088	344	122	183		1208
1978	10	215	856	210	195		1021
1979	2	327	185	83	178		1124
1980	17	1510	415	32	242	24	939
1981	5	642	444	39	76	112	920
1982	192	1618	1256	25	23	656	385
1983	0.8	5	139	77	12	831	298
1984	26	1914	3638	12	--	15297	240
1985	55	655	3853	110	53	11288	354
West-central Basin							
1982	0.3	9	17	0.3	2012		435
1983			1		20	1	240
1984	0.2	5096	1309		36	1262	247
1985		9	2433		23	9737	160

[1]Frontal gape and fishing area for the modified Biloxi bottom trawl was estimated to be 2.44 times greater than that of the smaller outboard trawl. This conversion factor was used to correct the indices for 1977-1981.

[2]Effort for 1977-81 included weekly trawling from mid-June through October. Effort from 1982 is for a six week period in August-September each year.

Table 15. Seasonal year-class composition, average total length (cm) and average weight (g) of rainbow smelt (sexes combined) from index trawling in Lake Erie, 1985. n is sample size.

	Year Class Age	1984 1	1983 2	1982 3	1981 4	n
SPRING	Eastern Basin					
	% comp.		75.0	25.0		28
	Length		14.3	16.1		
	Weight		13.4	21.8		
	Central Basin					
	% comp.	92.0	5.0	2.0	1.0	100
	Length	8.9	12.1	14.9	15.8	
	Weight	3.6	8.0	13.5	18.0	
SUMMER	Eastern Basin					
	% comp.	41.8	11.6	41.8	4.7	43
	Lenght	11.9	15.3	16.1	15.5	
	Weight	7.2	20.2	23.8	22.0	
	Central Basin					
	% comp.		83.3	16.7		30
	Length		12.5	14.9		
	Weight		11.8	21.1		
	Combined					
	No. of fish	110	56	32	3	201
	% comp.	54.7	27.9	15.9	1.5	

Table 16. Seasonal year-class composition, average total length (cm) and average weight (g) of yellow perch (sexes combined) from index gillnetting in Lake Erie, 1985. n is sample size.

	Year Class / Age	1984 1	1983 2	1982 3	1981 4	1980 5	1979 6	1978 7	1977 8	1976 9	n
SPRING	Eastern Basin										
	% comp.	0.2	26.2	30.8	29.9	7.3	3.2	1.4	0.7	0.3	595
	Length	11.0	13.5	16.4	18.6	20.4	21.7	21.8	26.5	25.7	
	Weight	18.0	29.0	52.8	76.2	100.7	125.8	129.1	270.3	223.0	
	Central Basin										
	% comp.		1.9	78.4	13.2	5.4	1.0				205
	Length		15.4	18.1	21.4	23.4	28.2				
	Weight		43.8	68.8	116.9	163.7	296.0				
	Western Basin										
	% comp.		2.6	70.2	20.2	7.0					115
	Length		13.6	17.3	19.1	19.9					
	Weight		22.3	61.2	78.0	94.1					
SUMMER	Eastern Basin										
	% comp.	13.6	35.9	34.1	13.9	1.9	0.3		0.3		368
	Length	13.1	15.6	18.2	19.0	20.9	25.6		31.6		
	Weight	26.6	49.2	79.3	88.4	100.7	249.0		469.0		
	Central Basin										
	% comp.	38.0	6.0	43.5	11.6	0.9					216
	Length	13.9	16.9	19.4	20.3	24.1					
	Weight	31.5	63.5	105.2	115.9	233.0					
	Western Basin										
	% comp.	8.8	5.0	68.7	15.0	2.5					241
	Length	11.9	16.6	17.8	19.8	22.9					
	Weight	18.7	59.6	74.9	105.6	179.3					
FALL	Central Basin										
	% comp.	35.3	3.9	48.4	10.6	1.8					290
	Length	13.8	17.8	20.8	21.4	25.9					
	Weight	28.5	73.4	128.5	144.3	276.2					
	Western Basin										
	% comp.	15.6	1.7	70.0	9.8	1.7	1.2				174
	Length	13.9	20.2	19.7	20.6	24.1	27.1				
	Weight	26.4	98.7	95.3	111.5	192.0	276.5				
	Combined										
	No. of fish	281	331	1062	384	85	24	8	5	2	2204
	% comp	12.9	15.1	48.7	17.6	3.9	1.1	0.4	0.2	0.1	(2182)

Table 17. Catch per unit effort (catch/1000' gillnet) of walleye from Ontario bottom set index gillnets in western Lake Erie, fall 1978-1985

	Age Class									
Year	0	1	2	3	4	5	6	7	8	Total
1978		24.81	1.15	4.55	.71	.13				31.35
1979		.13	3.44	5.03	.40	.40	.13			9.53
1980		5.10	2.89	1.06		.19	.10			9.34
1981		6.78	1.05	.42	.21	.07				8.53
1982		.45	2.63	1.47	.32	.13	.26		.07	5.33
1983		18.65	2.37	1.47	.26	.26	.13			23.14
1984	.06	1.47	31.22	1.67	.83	.58	.26	.06	.13	36.28
1985	.59	12.76	1.12	13.62	.39	.46	.26	.20	.20	29.61

Table 18. Age composition, average total length (cm) and weight (g) of walleye from yearling walleye index gillnetting survey (bottom and canned nets) in Ontario waters of western Lake Erie, fall, 1985.

Year Class Age	1985 0+	1984 1+	1983 2+	1982 3+	1981 4+	1980 5+	1979 6+	1978 7+	1977 8+	Total
Bottom Nets										
No. of fish	9	194	17	207	6	7	4	3	3	450
% Comp.	2.0	43.1	3.8	46.0	1.3	1.6	0.8	0.7	0.7	
Length ± SD	22.4±0.8	33.2±2.1	39.1±3.5	46.6±3.8	56.4±5.9	57.7±3.9	58.6±4.2	64.0±6.5	53.7±6.9	
Weight	105.4	359.9	644.4	1124.6	2120.7	2236.6	2336.3	3251.7	1860.0	
Canned Nets										
No. of fish	1	85	8	77	3	1				175
% comp.	0.6	48.5	4.6	44.0	1.7	0.6				
Length ± SD		33.4±1.8	40.4±2.3	48.0±3.3	53.2±2.7	51.8				
Weight	101	362.4	717.1	1265.3	1794	1492				

Table 19. Year class composition, average total length (cm) and average weight (g) of white bass (sexes combined) from index gill-netting (2" to 5") in western Lake Erie, fall 1985. n is sample size.

Year Class Age	1984 1	1983 2	1982 3	1981 4	1980 5	n
Bottom Nets						
% comp.	31.6	5.3	27.4	32.5	3.2	95
Length	24.7	28.6	32.8	33.6	36.1	
Weight	217.3	369.6	567.9	113.4	654.1	
Canned Nets						
% comp.	12.5	4.2	29.2	54.2		24
Length	26.4	29.7	34.0	33.6		
Weight	269.3	399.0	677.6	689.5		
Combined						
% comp.	27.7	5.0	27.7	36.9	2.5	119
Length	24.8	28.8	33.0	33.6	36.1	
Weight	222.0	374.5	591.2	664.5	831.7	

Table 20. Seasonal year-class composition, average total length (cm) and average weight (g) of white perch (sexes combined) from regular index gillnetting in Lake Erie, 1985. n is sample size.

	Year Class Age	1984 1	1983 2	1982 3	1981 4	n
SPRING	Eastern Basin					
	% comp.		10.0	85.0	5.0	20
	Length		16.5	21.7	21.8	
	Weight		70.5	183.7	184.0	
	Central Basin					
	% comp.			83.3	16.7	6
	Length			19.9	21.6	
	Weight			134.2	163.0	
	Western Basin					
	% comp.		33.3	66.7		9
	Length		17.1	20.1		
	Weight		67.0	127.3		
SUMMER	Eastern Basin					
	% comp.	84.6	7.7	7.7		13
	Length	13.7	17.8	18.8		
	Weight	33.7	82.0	99.0		
	Central Basin					
	% comp.	48.9	20.2	25.5	5.3	94
	Length	12.4	16.9	20.7	21.2	
	Weight	23.6	72.8	142.0	154.0	
	Western Basin					
	% comp.		11.1	88.9		9
	Length		21.0	21.3		
	Weight		159.0	167.8		
FALL	Eastern Basin					
	% comp.		50.0		50.0	4
	Length		20.6		24.2	
	Weight		143.5		273.0	
	Central Basin					
	% comp.	75.7	5.1	19.2		99
	Length	14.4	19.9	21.9		
	Weight	44.0	140.0	183.9		
	Combined					
	No. of fish	132	33	80	9	254
	% comp.	51.9	12.9	31.5	3.6	

C. CURRENT PROGRAMS AND FUTURE PLANS

a. Fisheries Research Unit

1. Index Fishing

Midwater trawling and index gillnetting will be continued in all basins of Lake Erie and Lake St. Clair. Index bottom trawling during a six week period in late summer will be continued in the western and west-central basin areas.

2. Yearling Walleye Index Gillnetting

This interagency program to develop an index for walleye which might better reflect year-class strength in western and central Lake Erie will be continued. Additional stations may be established in central Lake Erie.

3. Walleye Tagging in Western Lake Erie

From 1981 to 1985 walleye captured with large mesh gillnets, were tagged and released in the Pelee Island and Hen/Chicken Island area of western Lake Erie. Tagging was done in March, April and May of each year. In each year the majority of walleye sampled were maturing and ripe males, age 2 and older.

Results from lumped (1981-85) and individual year data show that most walleye (73.5%) are recovered in the western basin with 17.6% in the central basin and 2.5% in the eastern basin. The majority of returns in the central basin are, however, from the west-central area with a small percentage in the far east-central area. Most recaptures (≈70%) are made in the spring of the tagging year. Recaptures in the central basin are made mainly in the summer and fall.

4. Habitat and Fish Community in Mitchell Bay, Lake St. Clair

Information about the factors affecting fish habitat and food in response to cultural perturbation and seasonal changes is basic to understanding the ecology of this important embayment. Water quality and associations of species of macrophytes, invertebrates and juvenile fishes are being studied to determine habitat utilization and community structure. Field work was completed in 1985. Processing of biolgical samples, data analysis and interpretation is expected to be completed in 1986.

5. Habitat and Fish Community - St. Luke's Bay, Lake St. Clair

This proposed study is an extension of the work in Mitchell Bay and the objectives are similar: to study the association of species of macrophytes, invertebrates and young fishes in order to determine habitat utilization and community structure. Some field sampling is scheduled to begin in 1986.

b. Fisheries Assessment Unit

1. Creel Census

After an extended survey conducted in 1985, the western basin creel will revert back to the standard July- August survey period in 1986. Plans for extending the survey period through September will be considered for 1987. Long Point Bay summer and winter creel census projects to be conducted by the Ministry's Simcoe District in co-operation with the Assessment Unit are planned for 1986.

2. Commercial Catch Sampling

The sampling of target and incidental species from the commercial catch will continue in 1986 with the level of sampling activity being comparable to that in 1985.

3. Nanticoke Fish Study

The Nanticoke Fish Study was established in 1971 as part of a joint industry-government environmental monitoring program aimed at evaluating the impact of shoreline industrialization in the Nanticoke area of Long Point Bay. The 1983 field year marked the end of a three year period characterized by operational levels having been reached by the participating industries.

A draft report presenting the results of the Fish Study from 1971 through 1983 was in preparation in 1985. This report is anticipated to be completed upon review in 1986.

4. Salmonid Sampling

In 1986, salmon and trout encountered in routine commercial catch sampling of target species will continue to be examined for lamprey scars and wounds and identifying marks. Similar observations will be made on salmonids taken in the sport fishery where arrangements with users can be made.

Stomach contents of salmonids will be sampled from sport caught fish in 1986.

5. Young-of-the-Year (YOY) Trawling Index

In 1980, YOY index trawling was expanded in Long Point Bay following surveys conducted by the Research Unit in earlier years. This project was not carried out in 1983; however, the survey was resumed in 1984 and further intensified in 1985. The intensity of sampling in 1986 will be maintained at the 1985 level.

6. Daily Commercial Catch-Effort Reports

During 1985, Assessment Unit staff were involved in development of a data storage and retrieval system required to support quota management. The inputs include daily catch and effort data at the licence level as well as ancillary economic data. Outputs include summaries of catch and value as presented earlier in this report and routine updates of catch for each licenced fishery. Further development and full implementation of the system is planned for 1986.

7. Central Basin Yellow Pickerel (Walleye) Reproduction Study

In 1984, a survey was conducted in the western part of the central basin to determine if walleye were reproducing in that area. In 1985, the survey was continued in the eastern part of the central basin. In each year, adult walleye were examined for maturity, egg pumping and larval fishing were conducted at selected sites and juvenile fish were sought using beach seines and trawls. A report on the 1984 survey has been completed and a report on the 1985 survey is in preparation.

In 1986, sampling at selected sites in the central basin will be repeated.

8. Yellow Pickerel (Walleye) Distribution Study

In 1985, a co-operative netting survey was conducted by the ministry and representatives of the commercial fishing industry. The intent was to gain information on the distribution of walleye in the Ontario waters of Lake Erie. The survey was organized by a committee made up of ministry staff, representatives of the commercial fishing industry and a representative of the Ontario Federation of Anglers and Hunters. Netting was carried out in the summer and fall of 1985. A further series of netting is planned for the spring of 1986.

c. Management

1. Regulations

The Ontario Fishery Regulations are in the process of being restructured into a more orderly fashion with three major sections: 1) General, 2) Sport Fish and 3) Commercial Fish. No major regulatory changes are anticipated for 1986; however, the appeal launched in 1985 is still before the courts.

The Commercial Fish Harvest Control System for quota management implemented in 1984 will remain in place for 1986.

The Ministry is proposing an increase in the minimum size limit for muskellunge in the Great Lakes from 28 inches to 40 inches. A reduction in the daily catch limit from two to one fish is also proposed. The minimum size limit proposed for the Niagara River is 37 inches.

2. Fish Stocking

1985 Plants

Rainbow Trout

16,000 yg	Ganaraska stock (Normandale FCS) in Big Creek tributaries 42° 36' 80°27'

Walleye

1,568 Adults	Thames River stock in Big Creek 42° 36' 80° 27' all with MNR metal jaw tags

1986 Planned

30,000 fg	Nottawasaga River stock (Normandale FCS) in Big Creek 42° 36' 80° 27'
1,000 Adults	Thames River stock in Big Creek 42° 36' 80° 27' all with MNR metal jaw tags.

This represents the sixth and final year for the walleye transfer program. During the period 1981-1985, 5,261 fish have been transferred.

d. Lamprey Scarring/Wounding Rates on Coho Salmon

In 1985, coho were examined during routine commercial catch sampling, supplementary commercial catch sampling, from the sport fishery and during the collection of specimens for contaminant analysis. Observations of lamprey scarring/wounding were made by Ministry staff and members of user groups.

From sampling conducted by Ministry staff, 135 coho were examined. Of these 94 were age 2+ fish and scars or wounds were observed on 6 fish (6%).

In the period July through August, 297 coho (not aged) were examined by charter boat operators and anglers from Erieau to Long Point. Of the fish examined, 2% exhibited scars or wounds.